Amendments to the Claims:

1. (Currently amended) A method comprising: ~~of enhancing the information contents which can be derived from a first image, containing motion artifacts, of a moving object, which method includes the following steps:~~

acquiring first modality image data while an imaged object moves over a range of motion and reconstructing the first modality image data into a motion artifacted first modality image;

[[a.]] acquiring second modality image data and reconstructing the second modality image data into second modality ~~using further~~ images which represent the object in [[a]] respective ~~state~~ states of motion with as few motion artifacts as ~~possible,~~ possible;

[[b.]] from the second modality images, determining a motion model which characterizes states of motion assumed by the object while ~~performing the motion between~~ moving through the states of motion;

[[c.]] forming an intermediate image of the object from the motion model and the ~~further~~ second modality images, the intermediate image representing the object ~~at least approximately~~ as if it had ~~performed~~ moved during the acquiring of the second modality image data over the range of motion over which the object moved as the first modality imaging data was acquired;

[[d.]] forming a combination image from the intermediate image and the first modality image.

2. (Currently amended) A method of enhancing ~~the information contents which can be derived from~~ a first image of a moving object, ~~containing~~ the first image containing motion artifacts, ~~of a moving object, which~~ the method ~~includes the following steps~~ including:

[[a.]] ~~using~~ acquiring further images ~~which~~ that represent the object in respective states of motion with as few motion artifacts as ~~possible,~~ possible;

[[b.]] from the further images, determining a motion model ~~which~~ that characterizes the states of motion assumed by the ~~object while performing the motion between the states of motion~~, object;

[[c.]] focusing the first image by means of the motion model.

3. (Currently amended) A method of enhancing [[the]] information contents ~~which can be derived from~~ of a first image of a moving object, to be reconstructed from projections acquired as the object moves over a plurality of states of motion and containing motion artifacts, ~~of a moving object,~~ which method includes ~~the following steps~~:

[[a.]] ~~using~~ acquiring further images ~~which~~ that represent the object in [[a]] ~~respective state~~ at least two of the states of motion with as few motion artifacts as ~~possible,~~ possible;

[[b.]] from the further images, determining a motion model ~~which~~ that characterizes the states of motion assumed by the object while the projections are acquired; ~~while performing the motion between the states of motion,~~

[[c.]] forming [[an]] at least one intermediate image of the object from the motion model and the further images, the at least one intermediate image representing one or more of the states of motion assumed by the object while the projections are acquired; ~~at least substantially as if it had performed the motion,~~

[[d.]] reconstructing the first image from the projections of the object and the at least one intermediate image.

4. (Currently amended) [[A]] The method as claimed in ~~claims~~ claim 1, wherein determining the motion model includes:

determining a respective motion vector field ~~is determined~~ for parts of the object ~~in order to determine the motion model~~.

5. (Currently amended) [[A]] The method as claimed in ~~claims~~ claim 1, wherein ~~in order to form~~ forming the intermediate image includes:

~~, first~~ forming other images of other states of motion of the object ~~are formed by means of the further images and the motion model,~~ from the second modality image data;

weighting ~~the images thus formed being weighted~~ and subsequently superimposing the other images and the second modality ~~superposed together with the further~~ images [[and]] in conformity with ~~the frequency~~ a frequency at which ~~the respective states~~ each of the other states of motion were assumed by the object ~~represented in the images occurs~~ while moving over the range of motion ~~is performed~~ while the first modality image data was acquired.

6. (Currently amended) [[A]] The method as claimed in claim 1, ~~wherein~~ further including:

elastically registering the intermediate image and the first modality image ~~are registered, notably elastically registered,~~ prior to the formation of the combination image.

7. (Currently amended) [[A]] The method as claimed in claim 1, ~~wherein~~ further including:

focusing the combination image ~~is focused in a further step~~.

8. (Currently amended) [[A]] The method as claimed in claim 2, ~~wherein~~ further including:

registering the focused image and at least one of the further images; and

forming a combination image ~~is formed~~ from the focused first image and the at least one of the further images~~, possibly by means of registration~~.

9. (Currently amended) [[A]] The method as claimed in ~~claims~~ claim 1, wherein the first modality image is one of a [[PET]] positron emission tomography (PET) image or a ~~SPECT~~ single positron emission computed tomography (SPECT) image and the ~~further~~ second modality images are one of [[CT]] computed tomography (CT) images and [[MR]] magnetic resonance (MR) images.

10. (Currently amended) An image processing system which includes a data processing unit for carrying out [[a]] the method as claimed in ~~claims~~ claim 1.

11. (Currently amended) ~~An examination apparatus, notably a medical~~ A medical examination apparatus, ~~which includes~~ the apparatus including:

[[-]] a device for forming images ~~and/or~~ or projections by means of a first imaging ~~method,~~ method;

[[-]] a second device for forming images ~~and/or~~ or projections by means of a second imaging ~~method,~~ method;

[[-]] an image processing system ~~which~~ that includes a data processing unit for carrying out [[a]] the method as claimed in ~~claims~~ claim 1.

12. (Currently amended) A computer readable medium containing instructions for controlling a data processing unit in such a manner that the data processing unit can carry out [[a]] the method as claimed in ~~claims~~ claim 1

13. (Currently amended) [[A]] The method as claimed in claim 2, wherein determining the motion model includes:

determining a respective motion vector field ~~is determined~~ for parts of the object ~~in order to determine the motion model~~.

14. (Currently amended) [[A]] The method as claimed in claim 3, wherein determining the motion model includes:

determining a respective motion vector field ~~is determined~~ for parts of the object ~~in order to determine the motion model~~.

15. (Currently amended) [[A]] The method as claimed in claim 2, further including:

forming additional ~~wherein in order to form the intermediate image, first~~ images of ~~other~~ others of the states of motion of the object ~~are formed by means of~~ from the further images and the motion model; ~~model,~~

weighting ~~the images thus formed being weighted~~ and subsequently superimposing the other images and the second modality ~~superposed together with the further~~ images [[and]] in conformity with ~~the frequency~~ a frequency at which ~~the respective states~~ each of the other states of motion were assumed by the object ~~represented in the images occurs~~ while moving over the range of motion ~~is performed~~ over which the first modality image data was acquired.

16. (Currently amended) [[A]] The method as claimed in claim 3, further including:

forming additional ~~wherein in order to form the intermediate image, first~~ images of ~~other~~ others of the states of motion of the object ~~are formed by means of~~ from the further images and the motion model; ~~model,~~

weighting ~~the images thus formed being weighted~~ and subsequently superimposing the other images and the second modality ~~superposed together with the further~~ images [[and]] in conformity with ~~the frequency~~ a frequency at which ~~the respective states~~ each of the other states of motion were assumed by the object ~~represented in the images occurs~~ while moving over the range of motion ~~is performed~~ at which the first modality image data was acquired.

17. (Currently amended) [[A]] The method as claimed in claim 2 wherein the first image is a [[PET]] positron emission tomography (PET) image or a ~~SPECT~~ single positron emission computed tomography (SPECT) image and the further images are one of [[CT]] computed tomography (CT) images and [[MR]] magnetic resonance (MR) images.

18. (Currently amended) [[A]] The method as claimed in claim 3 wherein the first image is a [[PET]] positron emission tomography (PET) image or a ~~SPECT~~ single positron emission computed tomography (SPECT) image and the further images are one of [[CT]] computed tomography (CT) images and [[MR]] magnetic resonance (MR) images.

19. (Previously presented) A method of motion compensation comprising:

acquiring a first sequence of image data of a moving object by a first imaging modality data acquisition system;

acquiring a second sequence of image data of the moving object by a second imaging modality data acquisition system;

determining a motion model related to periodic motion of the object based on the second sequence of image data;

using the determined motion model, generating from the first sequence of image data a first modality image data set in a selected motion state.

20. (Currently amended) The method as claimed in claim [[10,]] 19, further including:

generating a combined image data set in the selected motion state from the first modality image data set and a second modality image data set in the selected motion state.

21. (Previously presented) The method as claimed in claim 19, wherein the first imaging modality data acquisition system includes one of a PET system and a SPECT system.

22. (Previously presented) The method as claimed in claim 19, wherein the second imaging modality data acquisition system includes a computer

tomography (CT) system, and ultrasound system, or a fast magnetic resonance (MR) tomography system.

23. (Previously presented) The method as claimed in claim 19, further including:

registering coordinates systems of the first and second imaging modality data acquisition systems.

24. (Previously presented) The method as claimed in claim 19, wherein the first and second imaging modality data acquisition systems are mechanically linked.

25. (Previously presented) The method as claimed in claim 19, further including:

sensing motion of the object at least during acquisition of the second sequence of imaging data.

26. (Previously presented) The method as claimed in claim 25, wherein the sensed motion is a cyclic motion in which the object cyclically assumes each of a plurality of motion states.

27. (Previously presented) The method as claimed in claim 19, wherein the motion mode includes a motion vector field which indicates movement between at least two motion states.

28. (Previously presented) An imaging system comprising:

a first imaging modality data acquisition system for generating a first imaging modality sequence of image data;

a second imaging modality data acquisition system for generating a second imaging modality sequence of image data;

a motion sensor for sensing object motion;

a processor for determining a motion model from the sensed motion and the second modality sequency of image data.

29. (Previously presented) The imaging system as claimed in claim 28, wherein the motion model characterizes motion states assumed by the object while moving among a plurality of motion states.

30. (Previously presented) The imaging system as claimed in claim 28, further including:

operating mathematically with the motion model to transform the first imaging modality image data to a selected motion state.

31. (Previously presented) The imaging system as claimed in claim 28, wherein the first imaging modality data acquisition system is a PET system and the second imaging modality data acquisition system is a CT system.

32. (Previously presented) A method for motion corrected imaging comprising:

generating image data using a first imaging modality;

generating a plurality of images using a second imaging modality;

from the second imaging modality images and sensed motion of an imaged object, generating a motion model;

operating on the first modality image data with the motion model to create a first modality image in a selected motion state.

33. (Previously presented) The method as claimed in claim 32, further including:

combining the first modality image in the selected motion state with a second modality image in the selected motion state.